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Walla Walla District

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Prototype turbine to be tested at McNary Dam powerhouse

Walla Walla, Wash.– Two Pacific Northwest federal agencies are teaming up to explore improvements to the Columbia River hydroelectric power plant at McNary Dam.

The U.S. Army Corps of Engineers and the Bonneville Power Administration plan to install and test a fully operational prototype turbine in the McNary Dam powerhouse, near Umatilla, Ore.

Typically, turbine life is 25 to 30 years. The McNary Dam powerhouse is nearly 50 years old. No significant investments have been made to improve the efficiency of the generating units since they were installed.

”This project has great potential,” said Kevin Crum, project manager for the Corps. “We have a tremendous opportunity. While we have to upgrade aging turbines and the associated equipment, we also have an opportunity to improve turbine passage for fish and increase power output. We are going to take advantage of the technology and information that has become available since the installation of the dam more than 50 years ago,” said Crum. This project could result in replacing all 14 turbines and related electrical equipment at the dam.

Initial studies say modernizing turbines and related systems can improve power availability and hydraulic capacity. Estimates are the project could increase electrical output by 90 megawatts. That's enough to serve more than 50,000 homes.

The Walla Walla District, U.S. Army Corps of Engineers is currently soliciting proposals to evaluate potential contractors for prototype turbine designs. Some of the contractors will be chosen to design and build scale models. The models will be subjected to an extensive series of hydraulic and performance tests then evaluated for biological suitability, power efficiency and price.

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A contractor will then be selected to construct a full-size prototype, which would be installed in the McNary powerhouse. The unit would be subjected to biological testing and evaluated for both fish survival and hydraulic performance. The test results will be incorporated in a National Environmental Policy Act analysis.

Crum added that work on the models could begin this summer. "We expect to have the results from the model tests next year. The project could be completed as soon as 2015 for an estimated $160 million, depending on the outcome of the analysis and testing," Crum said.

"The McNary project is a key asset of the Federal Columbia River Power System," said Michael Berger, BPA project representative. "This modernization represents a significant investment in the region's electric power infrastructure. We have opportunities here to improve reliability, help the environment and add to the region's power supply."

In the Pacific Northwest up to 70 percent of electricity is generated from hydropower. The information learned from the McNary turbine testing has future applications throughout the entire hydropower system. The hydraulic capacity of McNary Dam -- the amount of water that passes through the powerhouse turbines -- is substantially less than that of any other project on the lower Columbia River. Congress authorized a second powerhouse in 1986, but it was deauthorized later, due to a lack of economic feasibility. McNary remains a hydraulic constraint on the river.

McNary Dam is one of four Corps hydroelectric projects on the main stem of the lower Columbia River. Congress authorized the dam in 1945 and the Corps began construction in 1947. The dam was completed in 1953 and all 14 turbines in the powerhouse were operating by February 1957.

The U.S. Army Corps of Engineers and the Bonneville Power Administration are striving to achieve environmentally sustainable solutions to hydropower issues.

More information about the McNary powerhouse modernization is available on web sites for the Walla Walla District at www.nww.usace.army.mil and BPA at www.bpa.gov.

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